

**IN THE UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION**

TRADING TECHNOLOGIES  
INTERNATIONAL, INC.,

Plaintiff

V.

IBG, LLC, et al.

*Defendants.*

No. 10 C 715

Judge Virginia M. Kendall

## MEMORANDUM OPINION AND ORDER

TT accuses certain IBG products of infringing two of its patents—the ‘132 and ‘304 Patents—through the doctrine of equivalents. IBG argues the limitations of claim vitiation and prosecution history estoppel prevent application of the doctrine of equivalents to its products and moves for summary judgment accordingly. For the following reasons, IBG’s motion for summary judgment of non-infringement of the ‘132 and ‘304 Patents under the doctrine of equivalents [1394] is granted.

## BACKGROUND

## I. '132 and '304 Patents

The patents at issue are “directed to the electronic trading of commodities.” (Dkt. 1401 Ex. 2, 3).<sup>1</sup> They claim a graphical user interface (“GUI”) “displaying market depth on a vertical or horizontal plane, which fluctuates logically up or down, left or right across the plane as the market price fluctuates” and “a static display of prices corresponding to the plurality of bids and asks.”

<sup>1</sup> While the Court would ordinarily rely on the parties' Rule 56.1 Statements of Material Fact on a motion for summary judgment, the Court declines to heavily rely on them in this matter—quite simply they are not useful. (*See* Dkt. 1451, Dkt. 1536). Nearly every statement is disputed without regard to whether the basis for dispute affects the outcome of the present motion. Instead, the Court relies on the underlying evidence itself to glean the material facts.

(*Id.*) The “pluralities of bids and asks are dynamically displayed in alignment with the prices corresponding thereto” and “[t]he values in the price column are static; that is, they do not normally change positions unless a re-centering command is received.” (*Id.*)

The patents disclose the following prior art GUI display:

**FIG. 2**

		201	202	203	204	205			
	Contract	Depth	BidQty	BidPrc	AskPrc	AskQty	LastPrc	LastQty	Total
1	CDHO	•	785	7626	7627	21	7627	489	8230
2			626	7625	7629	815			
3			500	7624	7630	600			
4			500	7623	7631	2456			
5			200	7622	7632	800			

(*Id.*) The grid depicts the inside market (highest ask and bid prices) and the market depth of a given commodity being traded. (*Id.*) On a conventional trading screen like Figure 2, the fluctuation of market prices “results in rapid changes in the price and quantity fields within the market grid[,]” which creates a problem: “If a trader intends to enter an order at a particular price, but misses the price because the market prices moved before he could enter the order, he may lose hundreds, thousands, even millions of dollars.” (*Id.*)

In contrast, the disclosed invention, illustrated by Figure 3 below, displays bid and ask columns and inside market indicators (area 1020) that move relative to a static price axis, “increas[ing] the speed of trading and the likelihood of entering orders at desired prices with desired quantities.” (*Id.*)

**FIG. 3**

SYCOM FGBL DEC99					-	□	×
E/W	10:48:44	BidQ	AskQ	Prc	LTQ		
1009	L 3		104	99			
1010	R 5		24	98			
1011	720		33	97			
1012	×	10	115	96			
1013	0						
1014	10 1H		32	95			
	50 3H		27	94			
1007	S 0 W 24 1K 5H		63	93			
	S 0 W 7 CLR		45	92			
1015	×	10	28	91			
1016	17 ▾		20	90	10		
1008	B 0 W 15 CXL	18		89			
	B 0 W 13 + -	97		88			
1017	NET 0	30		87			
1018	B 0 W 17 NET REAL	43		86			
1019		110		85			
		23		84			
1021		31		83			
		125		82			
		21		81			

1020

1001

1002

1003

1004

1005

1006

## II. Claim Construction & Prosecution History

The independent claims of the ‘132 Patent require “a static display of prices” that “does not move in response to a change in the inside market”/ “does not move when the inside market changes.” (Dkt. 1401-2). The independent claims of the ‘304 Patent require “a common static price axis” and further require that “when the inside market changes, the price levels along the common static price axis do not move ....” (Dkt. 1401-3). Originally, neither patent application included the requirement of a price axis that does not move in response to market changes. (Dkt. 1451 at ¶¶ 28–29). TT amended the ‘132 and ‘304 patent claims during prosecution to include that requirement. (*Id.*)

During claim construction in distinct litigation involving the ‘132 and ‘304 Patents, Judge Moran construed the phrase “a static display of prices” in the ‘132 Patent to mean “a display of

prices comprising price levels that do not change positions unless a manual re-centering command is received.” *Trading Techs. Int’l, Inc. v. eSpeed, Inc.*, No. 04 C 5312, 2006 WL 3147697, at \*4 (N.D. Ill. Oct. 31, 2006), *aff’d*, 595 F.3d 1340 (Fed. Cir. 2010). Similarly, he construed the phrase “a common static price axis” in the ‘304 Patent to mean “a line comprising price levels that do not change positions unless a manual re-centering command is received and where the line of prices corresponds to at least on bid value and one ask value.” *Id.* The parties do not dispute Judge Moran’s claim construction findings. (Dkt. 1451 at ¶ 27).

### III. Accused Products

IBG’s product TraderWorkstation BookTrader (“TWS BookTrader”) is a GUI used for the electronic trading of commodities “that displays market data aligned with their corresponding prices in a price axis” that may move automatically. (Dkt. 1451 at ¶ 55). TT accuses TWS BookTrader Builds 904–978 of infringing the ‘132 and ‘304 Patents under the doctrine of equivalents. (*Id.* at ¶ 54). In Builds 904–978, when the market midpoint or last traded price moves outside of the viewable rows on a trader’s screen, a five-second countdown timer is triggered, after which the price column will automatically recenter if the market midpoint or last traded price is still off the screen. (Dkt. 1402-6 at ¶¶ 202–03) (Dkt. 1451-7 at ¶¶ 87, 97–98, 100). During the timer, automatic recentering is disabled. (Dkt. 1402-6 at ¶ 203) (Dkt. 1451-4 at ¶ 156) (Dkt. 1451-7 at ¶¶ 98, 103). The five-second timer is also triggered if the user scrolls her mouse, resizes the screen, or clicks the page up/page down buttons. (Dkt. 1402-6 at ¶ 203) (Dkt. 1451-7 at ¶ 99). A user may continually restart the five-second timer by repeatedly taking these actions, and thereby prevent automatic recentering. (Dkt. 1451-4 at ¶ 158) (Dkt. 1451-7 at ¶ 101).

A user may also prevent automatic recentering by changing the number of displayed rows to a very high number. (Dkt. 1451-4 at ¶¶ 150–53) (Dkt. 1451-7 at ¶¶ 86–96). Builds 904–978

allow a user to set the amount of displayed rows up to 2,147,483,647. (Dkt. 1451-4 at ¶¶ 150, 152) (Dkt. 1451-7 at ¶¶ 89, 96). If the setting of configurable rows exceeds the amount of movement in the market over the course of a day, recentering will not occur. (Dkt. 1451-4 at ¶¶ 151, 153). TT's expert Michael Fenn opined:

By operating in a mode with this setting set sufficiently high, the user can make it impossible for the market midpoint to ever be outside of the rows currently loaded, preventing this setting from triggering re-centering. Namely, if the value of the setting shown above are set above the possible fluctuation of a market over the course of a day (e.g. 10,000 rows), BookTrader will never automatically re-center based on these settings.

(Dkt. 1451-7 at ¶ 89). Similarly, another TT expert, Christopher Thomas states, “[A] trader can set [row] settings to a value that makes it impossible for the midpoint of the best bid/best ask price (or the last traded price) to reach the end of the loaded rows....” (Dkt. 1402-6 at ¶ 208)

If a user attempts to send an order within one second of automatic recentering, Builds 904–978 also display a pop-up confirmation window warning the user that recentering has taken place and asking her to confirm the trade. (Dkt. 1451-7 at ¶ 105) (Dkt. 1451-4 at ¶ 159). According to several experts, this feature “prevent[s] the user from inadvertently entering an order at an unintended price due to the recentering of the price axis.” (Dkt. 1451-4 at ¶ 159) (Dkt. 1451-7 at ¶ 105: “[T]he software actually prevents the trader from missing his or her price by displaying a pop-up confirmation warning the user that a re-centering event has just occurred. This prevents a user from entering an order at an unintended price.”) (Dkt. 1402-2 at ¶ 208: “Book Trader prevents the user from missing her intended price by popping up a [c]onfirmation window asking the user to confirm that she intends to place an order at the price selected” and “eliminates the potentially costly ‘slippage’ problem from the prior art ... where a trader could enter an order at an unintended price.”).

### **LEGAL STANDARD**

Summary judgment is proper when “the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a); *see, e.g., Reed v. Columbia St. Mary’s Hosp.*, 915 F.3d 473, 485 (7th Cir. 2019). The parties genuinely dispute a material fact when “the evidence is such that a reasonable jury could return a verdict for the nonmoving party.” *Daugherty v. Page*, 906 F.3d 606, 609–10 (7th Cir. 2018) (citing *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986)). In determining whether a genuine issue of material fact exists, the Court draws all reasonable inferences in favor of the party opposing the motion. *Anderson*, 477 U.S. at 255; *Zander v. Orlich*, 907 F.3d 956, 959 (7th Cir. 2018).

### **DISCUSSION**

An accused product that does not literally infringe the asserted claims of a patent, may still infringe the patent under the doctrine of equivalents “if there is not a substantial difference between the limitations of the claim and the accused product.” *Bayer AG v. Elan Pharm. Rsch. Corp.*, 212 F.3d 1241, 1250 (Fed. Cir. 2000). “[E]quivalence [is] assessed on a limitation-by-limitation basis,” rather than on an assessment of the invention as a whole. *Freedman Seating Co. v. Am. Seating Co.*, 420 F.3d 1350, 1358 (Fed. Cir. 2005). The doctrine of equivalents is subject to various limitations, two of which are claim vitiation and prosecution history estoppel. An element of an accused product “is not, as a matter of law, equivalent to a limitation of the claimed invention if such a finding would entirely vitiate the limitation.” *Freedman*, 420 F.3d at 1358. Prosecution history estoppel “prevents a patentee from recapturing through the doctrine of equivalents the subject matter that the applicant surrendered during prosecution.” *Integrated Tech. Corp. v. Rudolph Techs., Inc.*, 734 F.3d 1352, 1356 (Fed. Cir. 2013). While infringement under the doctrine

of equivalents is a question of fact, whether application of the doctrine is prevented under the limitations of claim vitiation and prosecution history estoppel is a question of law. *Bayer*, 212 F.3d at 1251; *Trading Techs. Int'l, Inc. v. eSpeed, Inc.*, 595 F.3d 1340, 1355 (Fed. Cir. 2010).

TT claims TWS BookTrader Builds 904–978 infringe the ‘132 and ‘304 Patents under the doctrine of equivalents. IBG argues TT’s reliance on the doctrine of equivalents to establish infringement is barred by the limitations of claim vitiation and prosecution history estoppel. First, IBG claims a finding of equivalence would vitiate the “static” claim limitation in the ‘132 and ‘304 Patents because Builds 904–978 have automatic recentering functionality that cannot be permanently disabled. Second, because TT narrowed the ‘132 and ‘304 Patents to cover price axes that do not move in response to market changes, IBG asserts TT is barred from asserting that Builds 904–978, which have price axes that move in response to market changes, infringe the patents.

### **I. *eSpeed* and *Sungard***

IBG’s motion is premised on two previous opinions involving the ‘132 and ‘304 Patents: *eSpeed* and *SunGard*. In *Trading Techs. Int'l, Inc. v. eSpeed, Inc.*, the Federal Circuit affirmed a finding that eSpeed’s Dual Dynamic and eSpeedometer products did not infringe the ‘132 and ‘304 Patents under the doctrine of equivalents. 595 F.3d 1340, 1356 (Fed. Cir. 2010). eSpeed’s DualDynamic product “automatically and instantaneously re-centers the price levels so as to move the inside market back to the field of the trader’s view if the inside market shifted a pre-determined number of ticks from the center of the display” and traders could not disable this feature. *Id.* at 1348. Although recentering would only occur once or twice per trading day, the Federal Circuit held that a finding of equivalence would vitiate the “static” claim limitation in the ‘132 and ‘304 Patents:

This court concludes that the occasional automatic re-centering is not merely an insubstantial variation. The relevant standard for measuring the difference in this instance is not the frequency of automatic re-centering. Instead this court must detect the difference between a price axis that moves only in response to the trader's instruction and a price axis that adjusts itself without prompting. ... Dual Dynamic's automatic re-centering feature still presents the potential problem of the prior art that allowed the inside market price to move while a trader was trying to secure a deal. Thus Dual Dynamic's automatic re-centering feature is substantially different from the claimed invention and cannot fall within the scope of the claims under the doctrine of equivalents without doing violence to the “static” claim element.

*Id.* at 1356.

In eSpeed’s eSpeedometer product, “the entire display slowly drifts towards the center of the trader's screen after each and every change in the inside market.” *Id.* The product also contains a “mouse lock” feature whereby “the system may lock a pointer to a price the user points to” when the inside market shifts and automatic recentering occurs. *Trading Techs. Int’l, Inc. v. eSpeed, Inc.*, 507 F. Supp. 2d 854, 864 (N.D. Ill. 2007). The district court concluded that automatic drift recentering does not vitiate the “static” limitation because it “does not appear that a trader may miss an intended price” due to the lock feature. *Id.*<sup>2</sup> Nevertheless, because the eSpeedometer’s price axis moved in response to changes in the inside market, the district court concluded, and the Federal Circuit affirmed, that TT was barred from asserting that eSpeedometer is an equivalent under prosecution history estoppel. *eSpeed*, 595 F.3d at 1356–57. During prosecution history, TT amended the ‘132 and ‘304 Patents to “clarify[y] that the claimed price levels ‘do not move’ when the inside market changes” and therefore, “clearly surrendered a GUI with price levels that move in response to inside market changes.” *Id.* at 1357.

In *Trading Techs. Int’l, Inc. v. SunGard Data Sys., Inc.*, the Federal Circuit affirmed a finding that certain versions of defendants’ QuickTrade and TradeMatrix products did not infringe

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<sup>2</sup> The Federal Circuit did not review the district court’s conclusion that TT was barred from asserting eSpeedometer as an equivalent under the limitation of claim vitiation.



the ‘132 and ‘304 Patents under the doctrine of equivalents. 643 F. App’x 987, 989 (Fed. Cir. 2016). In QuickTrade and TradeMatrix, “the price display automatically recenters after a certain time period.” *Id.* at 988. “Although automatic recentering cannot be disabled by the user, the user can set the amount of time between recentering” for up to approximately three years in QuickTrade and 68 years in TradeMatrix. *Id.*; *Trading Techs. Int’l, Inc. v. GL Consultants, Inc.*, No. 05 C 4120, 2014 WL 6461578, at \*6 (N.D. Ill. Nov. 18, 2014). Later versions of QuickTrade include a 10-second countdown timer before recentering occurs and a lockout period during which all order entry is disabled one second prior to recentering. *GL Consultants*, 2014 WL 6461578, at \*6.

Relying on *eSpeed*, the district court concluded that a finding of equivalence with respect to TradeMatrix and earlier versions of QuickTrade would vitiate the static limitation in the ‘132 and ‘304 Patents. *Id.* at \*11. Although QuickTrade and TradeMatrix could be set to recenter only occasionally, “users are always at risk of missing their intended price at the time that the automatic recentering occurs.” *Id.* Affirming this finding, the Federal Circuit observed:

[T]he accused products do not utilize the benefit of the claimed invention. In *eSpeed*, we rejected the argument that a product which only occasionally recentered automatically could still infringe under the doctrine of equivalents where the product continued to present the problem of the prior art. The accused products here recenter automatically, and the products provide no way for the user to know whether recentering will occur.

*SunGard*, 643 F. App’x at 990.

With respect to the later versions of QuickTrade, however, the district court concluded that like the mouse lock feature in DualDynamic, the one-second lock feature in these versions “seemingly prevents trade commands from being entered at erroneous prices levels.” *GL Consultants*, 2014 WL 6461578, at \*12 (quoting *eSpeed*, 507 F. Supp. 2d at 864). This created a genuine issue of material fact on whether claim vitiation prevents TT from asserting infringement under the doctrine of equivalents. *Id.* Finally, the court observed that because the QuickTrade and

TradeMatrix products automatically recentered after pre-set time intervals, rather than in response to market changes, prosecution history estoppel did not apply. *Id.*<sup>3</sup>

## II. Claim Vitiating

IBG argues *eSpeed* and *Sungard* require a finding that claim vitiation prevents TT from asserting TWS BookTrader Builds 904–978 infringe the ‘132 and ‘304 Patents under the doctrine of equivalents. IBG maintains that like the DualDynamic, TradeMatrix, and earlier QuickTrade products, the actions a user can take to prevent automatic recentering in Builds 904–978 (scrolling the mouse, resizing screen, changing number of loaded rows, etc.) merely delay or reduce the frequency of automatic recentering, and thus, “still present[ ] the potential problems of the prior art”: missing the intended price. *eSpeed*, 595 F.3d at 1356.

Two of TT’s expert witnesses, however, opine that automatic recentering can be rendered *impossible* by setting the loaded or displayed rows to a sufficiently high number. (Dkt. 1451-7 at ¶ 89: “By operating in a mode with this setting set sufficiently high, the user can make it impossible for the market midpoint to ever be outside of the rows currently loaded, preventing this setting from triggering re-centering. Namely, if the value of the setting shown above are set above the possible fluctuation of a market over the course of a day (e.g. 10,000 rows), BookTrader will never automatically re-center based on these settings.) (Dkt. 1402-6 at ¶ 208: “[A] trader can set [row] settings to a value that makes it impossible for the midpoint of the best bid/best ask price (or the last traded price) to reach the end of the loaded rows....”). A TWS BookTrader user also testified that when trading he sets the number of loaded rows to a very high number like “a thousand, 10,000, 20,000, 50,000 lines, and at that point, you know, I—it’s never going to recenter. For an asset to move that much throughout a day would be basically impossible.” (Dkt. 1451-10 at 21–

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<sup>3</sup> The Federal Circuit did not review the district court’s determinations that prosecution history estoppel did not apply to any of the products or that claim vitiation did not apply to the later versions of Quick Trade.

22). The testimony of these witnesses creates a genuine issue of material fact regarding whether automatic recentering in Builds 904–906 is truly impossible at a certain row setting, or a remote, but possible occurrence.

Further, unlike the products found to vitiate the “static” claim limitation in *eSpeed* and *Sungard*, Builds 904–978 have features that “seemingly prevent[ ] trade commands from being entered at erroneous prices levels.” *eSpeed*, 507 F. Supp. 2d at 864. The DualDynamic, TradeMatrix, and earlier QuickTrade products “provide no way for the user to know whether recentering will occur.” *SunGard*, 643 F. App'x at 990. In contrast, automatic recentering in Builds 904–978 will only occur after the expiration of a five-second timer alerting the trader that recentering is about to take place. This visual indication of pendent recentering allows the user to take actions to avoid missing her intended price. (See Dkt. 1402-6 at ¶ 210: “The five-second timer is displayed to the user, which also provides a visual indication to alert the user as to precisely when the recentering event will occur” and “ensures that the user obtains her intended price[.]”). Builds 904–978 also include a one-second warning feature that asks a user to confirm a trade placed within one second of recentering, which further “prevent[s] the user from inadvertently entering an order at an unintended price due to the recentering of the price axis.” (Dkt. 1451-4 at ¶ 159) (Dkt. 1451-7 at ¶ 105) (Dkt. 1402-2 at ¶ 208). At the very least, these features raise a genuine issue of material fact regarding whether Builds 904–978 present the problem of the prior art and preclude summary judgment. IBG’s motion for summary judgment on grounds of claim vitiation is denied.

### **III. Prosecution History Estoppel (PHE)**

During prosecution history, TT amended the ‘132 and ‘304 Patents to “clarify[y] that the claimed price levels ‘do not move’ when the inside market changes,” and therefore, “clearly

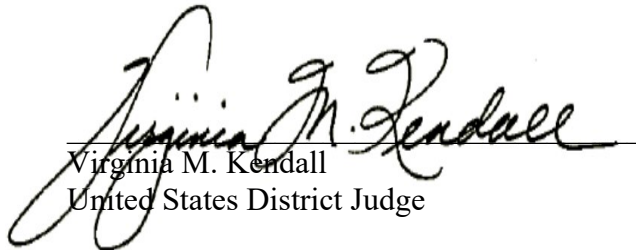
surrendered a GUI with price levels that move in response to inside market changes.” *eSpeed* 595 F.3d at 1357. IBG argues, that as in *eSpeed*, prosecution history estoppel prevents TT from asserting Builds 904–978 are equivalents because, unlike the recited inventions of the ‘132 and ‘304 Patents, they contain price axes that automatically recenter in response to market changes.

TT attempts to raise a material dispute of fact by arguing that automatic recentering in the accused products occurs in response to the expiration of the five-second countdown timer, and not in response to market changes. The evidence before the Court, however, establishes that the actual impetus for recentering is a change in the market and that the five-second timer merely *delays* such movement. (Dkt. 1402-10 at 207: BookTrader “recenters after changes in the market...under certain conditions.”) (Dkt. 1451-7 at ¶¶ 87, 90: “[P]rice axis will automatically re-center if the last traded price or the market midpoint goes outside the rows currently loaded....”) (Dkt. 1451-9 at 2–3: “When the inside market (or last trade price) moves outside the display area, the ladder will automatically re-center on the inside market (or last trade price).”) (Dkt. 1451-5 at 214–19: “BookTrader... will recenter if the market moves” and “5-second countdown timer ... delays the recentering.”) (Dkt. 1451-6 at 76–78: “[T]he timer is just delaying the recentering... But you’re not disabling at all the process by which it recenters.”). While TT’s expert Mr. Thomas opined that “BookTrader’s ‘automatic’ recentering only occurs in response to the expiration of 5-second countdown timer[,]” he repeatedly acknowledges that the price axes in Builds 904–978 “will recenter if the market moves outside the viewable rows on the screen.” (Dkt. 1402-6 at ¶¶ 202–03, 225) (Dkt. 1451-4 at ¶¶ 151–52). On the evidence before the Court, no reasonable juror could conclude that the price axes in Builds 904–978 do not move in response to market changes. Prosecution history estoppel applies.

A “patentee may rebut the application of prosecution history estoppel by establishing that the equivalent would have been objectively unforeseeable to one of ordinary skill in the art at the time of the amendment.” *Integrated Tech. Corp. v. Rudolph Techs., Inc.*, 734 F.3d 1352, 1359 (Fed. Cir. 2013). TT argues Builds 904–978 were unforeseeable at the time of amendment because their design post-dates amendment of the ‘132 and ‘304 Patents and the initiation of this lawsuit. Apart from the conclusory testimony of Mr. Thomas, however, TT fails to present adequate facts regarding the state of the art or understanding of an ordinary person of skill in the art at the time of the amendment, without which the presumption of estoppel is not overcome. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 344 F.3d 1359, 1369 (Fed. Cir. 2003) (“[O]bjective unforeseeability depends on underlying factual issues relating to, for example, the state of the art and the understanding of a hypothetical person of ordinary skill in the art at the time of the amendment.”). Mere evidence that “[t]echnology [was] developed after an amendment” is insufficient. *Integrated Tech.*, 734 F.3d at 1359. <sup>4</sup> As TT fails to rebut the application of prosecution history estoppel, IBG’s motion for summary judgment is granted.

### **CONCLUSION**

For the foregoing reasons, IBG’s Motion for Summary Judgment of Non-Infringement of U.S. Patent Nos. 6,722,132 and 6,766,304 under the Doctrine of Equivalents [1394] is granted.

  
Virginia M. Kendall  
United States District Judge

Date: June 17, 2021

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<sup>4</sup> In a footnote, TT also attempts to invoke another exception to prosecution history estoppel, tangentiality. (Dkt. 1450 at fn. 6). Because TT fails to adequately develop this argument, the Court deems it waived. *See United States v. Berkowitz*, 927 F.2d 1376, 1384 (7th Cir. 1991) (“[P]erfunctory and undeveloped arguments ... are waived.”).